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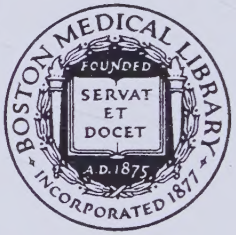

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A Brief Guide

TO

Vibratory Technique

By Noble M. Eberhart, A. M., Ph. D., M. D.

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THIRD EDITION, REVISED AND ENLARGED.

Drawings by Margaret D. Eberhart

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INTRODUCTION.

This little book has been prepared to serve as a convenient and brief guide to the practical technique of Vibratory Stimulation, together with some general discussion of the principles upon which it is founded. The author has had many years' experience involving the daily use of various types of vibrators, not only in his private practice, but also in college and hospital work, and has had ample opportunity of testing both machines and technique.

The author wishes it distinctly understood that the introduction into the book of a number of the diseases which have been included does not imply that vibration is necessarily the best treatment for these particular troubles,

nor the only treatment. Other methods are not contra-indicated; the vibratory technique being given solely as a guide for the employment of this therapeutic measure, whether used alone or in conjunction with other methods.

For instance, in tonsilitis, although enthusiasts consider vibration the only treatment necessary, the author would deem the physician foolish to discard his usual treatment for vibration alone; but if he has a vibrator he can help out his routine materially by following the technique indicated.

Again, locomotor ataxia has been included and there even have been cases of symptomatic cures reported by operators using vibratory stimulation alone. The author, however, does not wish to imply by including this disease in the list that he necessarily considers it curable, by this or any other measure, but gives the technique for treatment when vibration is used.

The intention has been to produce a brief and handy ready-reference book for the busy practitioner, telling him necessary facts in few words.

NOBLE M. EBERHART.

7 W. Madison St., Chicago, Ill.

NOTE TO SECOND EDITION.

The sale of three thousand of these books in eighteen months has shown that a field for the work exists.

In the present edition, which has been thoroughly revised, a number of full-page drawings have been introduced to make the technique more easily comprehended; also a glossary of technical terms, and sections on regional technique.

THE AUTHOR.

NOTE TO THIRD EDITION.

In presenting the third edition some minor changes have been made, but the text remains practically as in the previous edition.

THE AUTHOR.

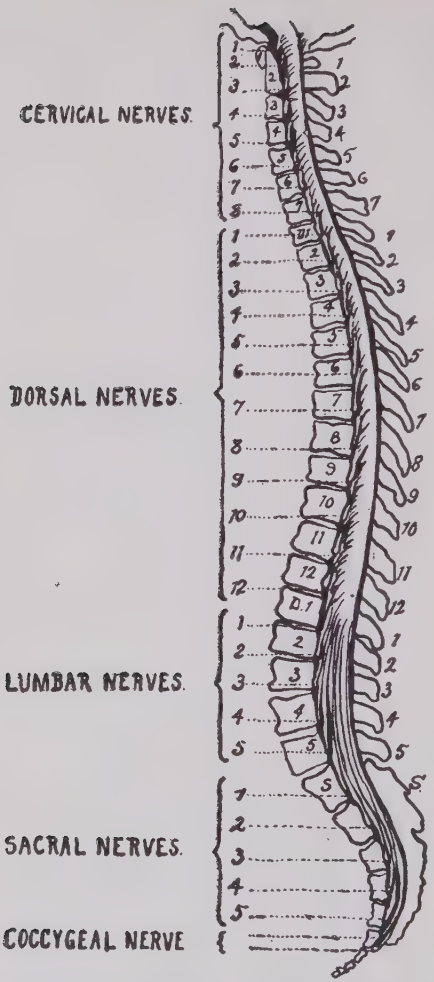


PLATE I. Lateral view of spinal column showing points of exit of the spinal nerves. The bodies of the vertebræ and the spinous processes of the cervical, dorsal and lumbar regions are numbered for convenience in referring to them.

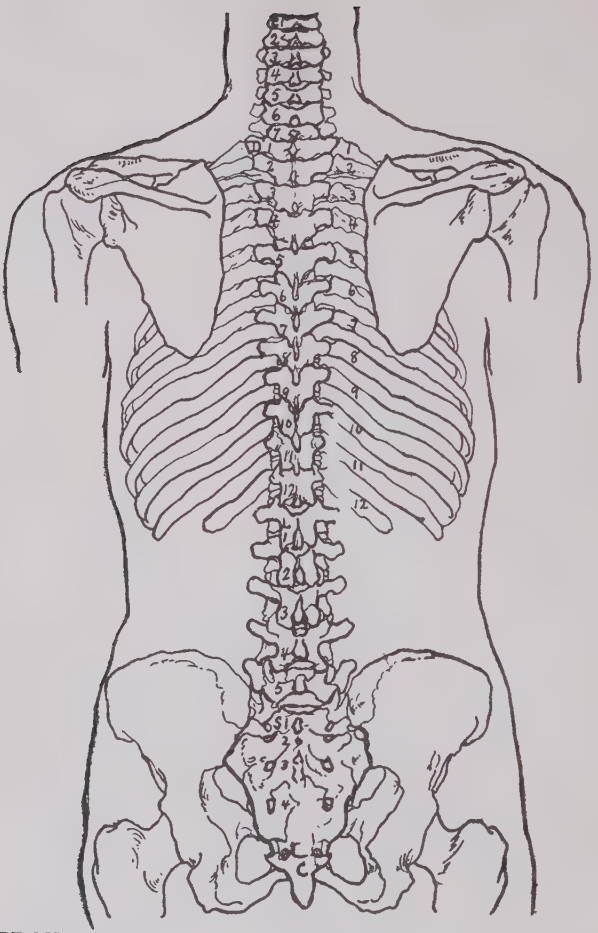
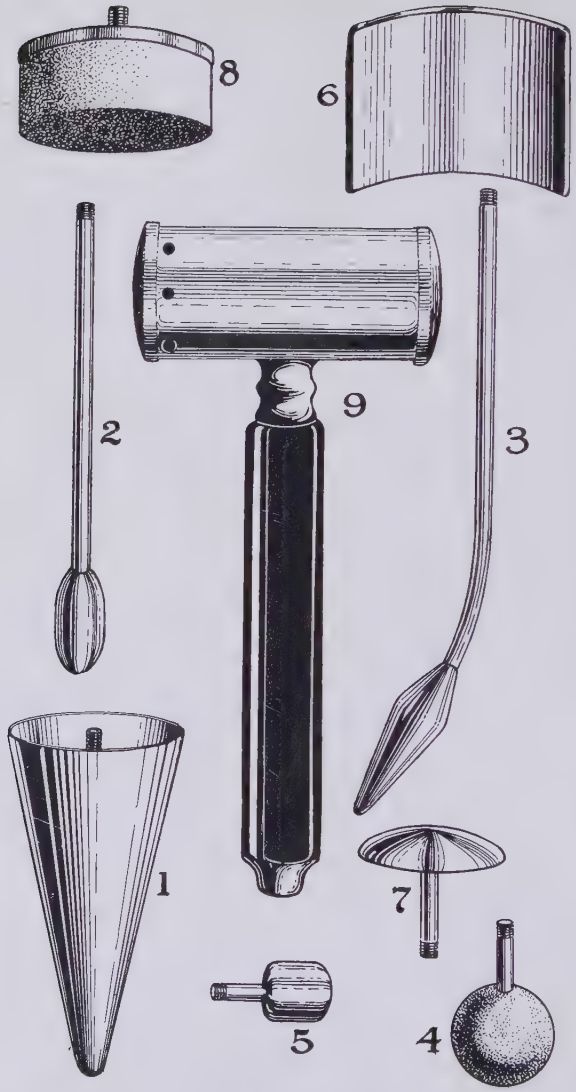


PLATE II. A chart showing the spine with vertebræ numbered, to enable the physician to note readily the centers to be treated as directed in the technique.



No. 1. Recto-Vaginal Dilator. No. 2. Prostatic Applicator. No. 3. Vaginal-Utero Dilator. No. 4. Cushion Spinal Applicator. No. 5. Metal Ball Applicator. No. 6. Concave Muscle Applicator. No. 7. Convex Muscle Applicator. No. 8. Sensitive Brush. No. 9. Cyphers' Pneumatic Vibrator.

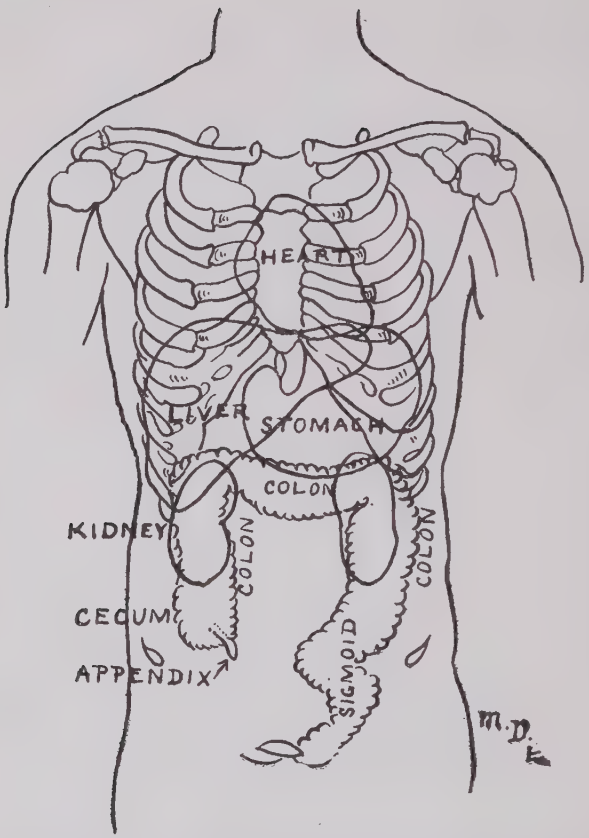


PLATE IV. Showing surface areas corresponding to various internal organs.

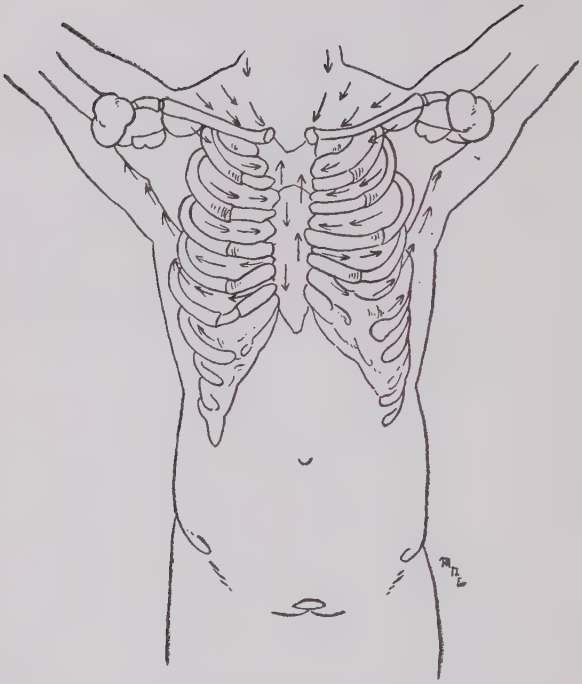


PLATE V. Illustrating method of vibrating the chest. The arrows indicate the directions of the various strokes.

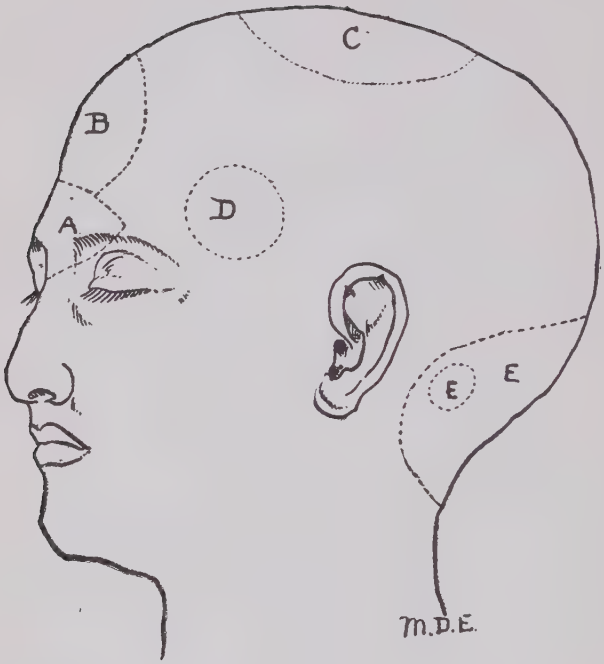


PLATE VI. Illustrates the various areas of the head where headaches occur. See explanation under Regional Technique.

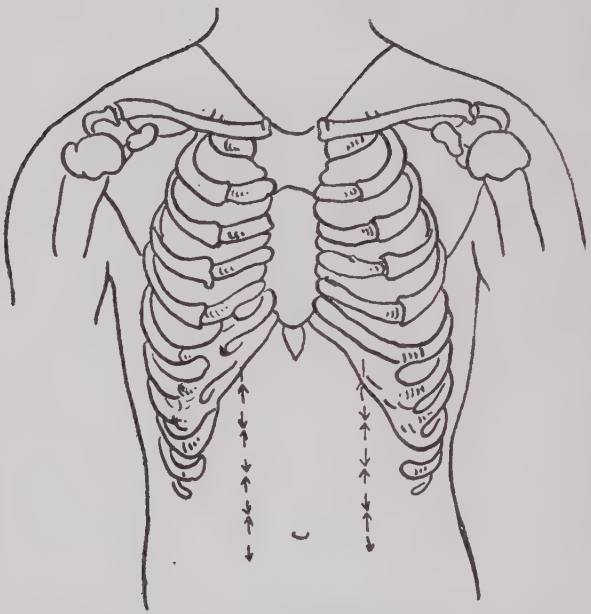


PLATE VII. To influence the solar plexus vibrate up or down on both sides as indicated by the arrows.

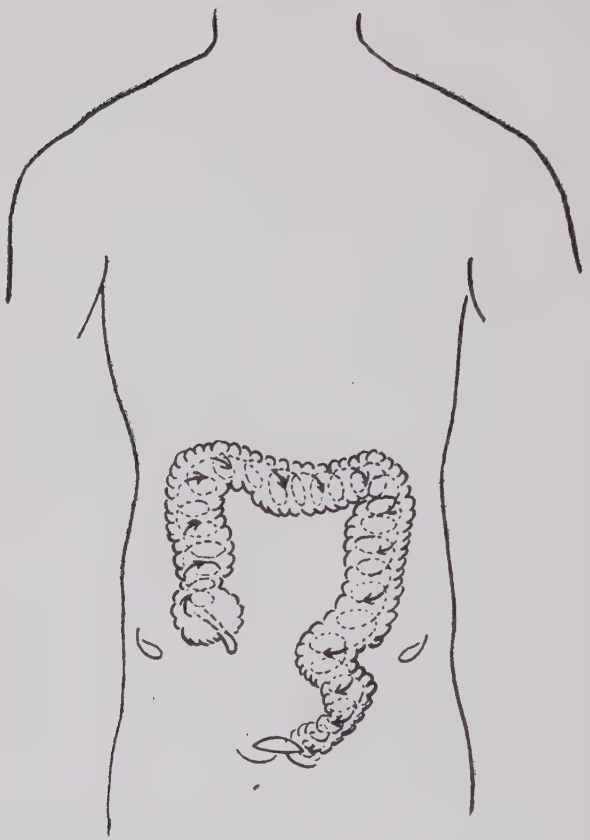


PLATE VIII. The arrows and the dotted line show the direction to follow in the abdominal treatment of constipation.

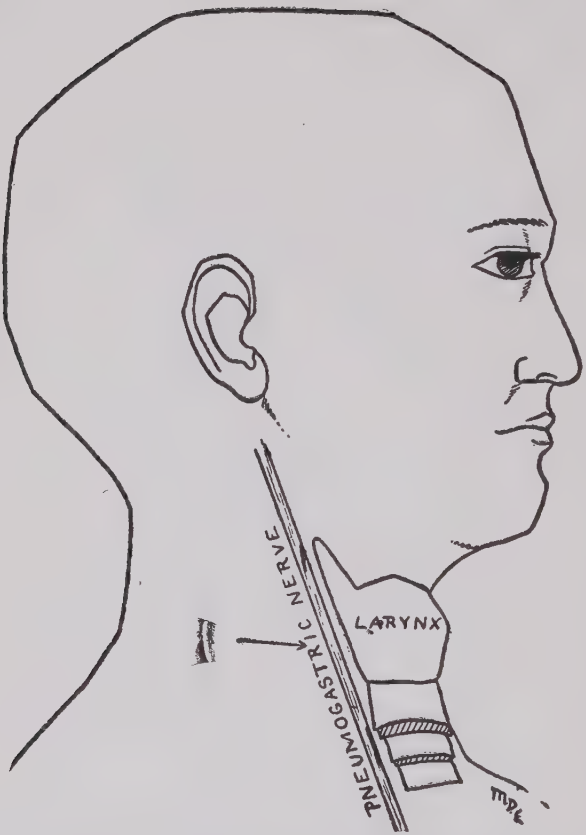


PLATE IX. Diagrammatic illustration showing the most convenient place to vibrate the pneumogastric nerve. See Regional Technique.

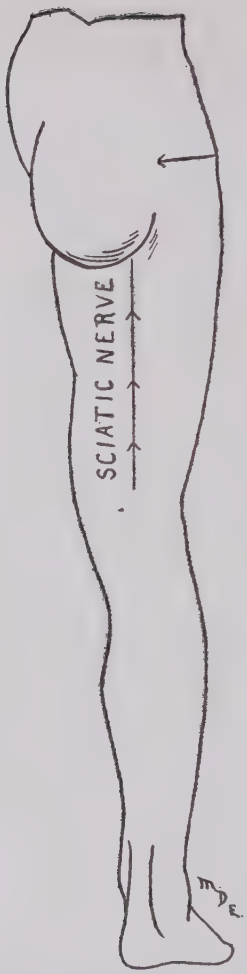


PLATE X. The arrows indicate where to vibrate to influence the sciatic nerve. See Regional Technique.

CONSERVATISM.

It is only natural when one finds apparently unusual and remarkable results following any line of treatment, that he should become enthusiastic over that form of treatment, and there is always danger that he may be carried beyond the boundaries of reason and common sense.

The author of this work stands for conservatism. He believes heartily in the value of vibration and makes daily use of it in his practice; but he does not believe it will cure everything, nor that it should be used to the exclusion of all other measures.

It is like any method of treatment; cures many cases; is of great assistance in others; and is positively harmful in a few.

No attempt, in the diseases listed, has been made to classify them according to whether vibration is considered curative or merely a valuable aid.

No disease, however, is included unless successful results, either in the nature of real cures, or else marked improvement, have been reported by reliable operators.

SCOPE.

Vibration has been applied principally to chronic conditions and this represents its greatest field at present.

It is, however, useful in many acute diseases, but must here be employed with much greater care and in a number of cases is contraindicated.

ADJUNCT TO OTHER TREATMENT.

Vibration has become a most valuable adjunct to various other forms of treatment, notably the X-ray and the high-frequency current.

It is especially useful in connection with the X-ray in stimulating the lymphatics draining a diseased area and thus carrying off more rapidly the broken-down products of the destructive processes of the X-ray; and, I believe, through its effect on the blood supply, also lessening the tendency to X-ray burns.

Since the high-frequency current represents very rapid electrical vibrations, it really means vibratory stimulation carried to a still higher degree and the two measures are therefore immediately complementary to one another.

BASIS.

The fundamental principles upon which vibratory stimulation is based are both scientific and common-sense, as they tend to follow and aid Nature's own methods of overcoming or relieving diseased conditions.

It has been noted that when a function or an organ was diseased, the nerve-center controlling the same ordinarily showed sensitiveness to deep pressure or vibration; and that when vibration was properly applied to the sensitive area, the diseased condition tended to disappear coincidently with the tender spot.

In a broad sense, when a nerve-center is vibrated it seems to have enough independent judgment to tend to right any abnormal condition within the reach of its jurisdiction.

Vibration is found to aid physiological processes and therefore assists in a perfectly natural way the restoration of disturbed functions.

PHYSIOLOGY.

The various properties of vibration have been summarized by different authors, following in a general way the classification below, which originated with Pilgrim.

(1) Vibration increases the volume of blood and lymph flow to a given area or organ.

(2) It increases nutrition.

(3) It improves the respiratory processes and function.

(4) It stimulates secretion.

(5) It improves muscular and general metabolism and increases the production of bodily heat.

(6) It stimulates the excretory organs and assists elimination.

(7) It tends to soften and relieve muscular contractures.

(8) It relieves engorgement and congestion.

(9) It facilitates the removal, through the natural channels of the lymphatics, of tumors, exudates, and other products of inflammation; relieving varicosities and dissipating eruptions.

A careful consideration of this synopsis will naturally indicate to the physician the diseases and conditions which will be benefited by vibration.

The general working theory is—

(a) All functions and organs of the body are controlled by nerves or nerve-centers, the latter located principally in the spinal cord.

(b) If a diseased condition exists, stimulation (vibration) of these centers tends to bring about a restoration of normal functions.

Aside from, or conjointly with, its effect upon the circulation and its control through nerve stimulation, the great curative feature of vibratory stimulation depends, in my opinion, upon its action on the lymphatic system.

The importance of the lymphatics is too often overlooked. When we stop to think that no products, either of nutrition or waste, can pass between the tissues and the blood, except through the medium of the lymph stream, then only do we realize their absolute control of the situation.

They have been very appropriately called the "middle men" of the system, transferring materials from the blood within the capillaries to the lymph stream without and making the same interchange between the lymph and the tissues.

NEITHER OSTEOPATHY NOR MASSAGE.

Vibration is neither osteopathy nor massage, although involving many of the fundamental principles upon which these methods are based.

It presents, however, a distinct system, suitable to the dignified use of the regular physician and agreeable and satisfactory to his patients.

STIMULATION AND INHIBITION.

Whether it is applied to nerve-centers or to their peripheries; to lymphatics or to produce circulatory changes, the employment of vibration places in the physician's hands two important agencies, stimulation and inhibition.

The one stirs up sluggish organs or functions to renewed activity; the other soothes irritable ones or slows the activities when exaggerated.

At the same time one is but the successor of the other and we might call them, with equal propriety, stimulation and over-stimulation.

The first effect of the application of vibration is stimulation.

It requires ordinarily a medium stroke and only moderate pressure and increases the ac-

tivity of the nerve-center treated and through it of the organ or function it controls.

In spinal stimulation the ball applicator is applied between the transverse processes of the spinal vertebræ.

The time required is from three or four up to twelve or fifteen seconds; but occasionally it requires much longer, even up to seventy or eighty seconds.

The longer the stroke and stronger the pressure the quicker stimulation will result, and vice versa.

Inhibition is the result of continued or overstimulation, just as a small amount of alcohol stimulates and a large amount paralyzes.

The dividing line between stimulation and inhibition is not easy to state. Inhibition often results in twenty to forty seconds with a long stroke and deep pressure, but sometimes requires two, three or even five minutes. It will be seen from the foregoing that the two over-

lap somewhat and what would be necessary to produce stimulation in one patient or part, would result in inhibition in another, and each patient therefore must be considered from his or her individual standpoint.

It is obvious that the time not only varies with different patients, but also even in the same patient on different occasions. Again, the size and weight of the vibrator used, as well as the character of the stroke it delivers, influence the time. With large machines the shorter time may be counted on and care used that inhibition is not produced when stimulation is sought. With portable vibrators the longer time must be kept in mind. The operator must learn by experience the time required with the instrument he uses and then can easily adapt the technique to his personal requirements.

In the following pages the technique is based on the results obtained by a machine of medium

weight. If a very large and powerful machine is used the shortest time will be sufficient. If a small vibrator is used the time must be increased materially over that stated.

For this reason I have preferred to state in the technique that stimulation or inhibition is sought, leaving it to the judgment of the operator to adjust the time in accordance with the form of vibrator which he uses.

The slightest vibration of a nerve-center undoubtedly produces stimulation, but it may not be sufficient stimulation, hence the need of regulating the time, speed and pressure to accomplish the required degree; when it then becomes equally important not to carry it to the point of paralyzing or inhibiting the centers unless the latter result is desired.

VIBRATORS.

It is not the purpose of this condensed guide to give any extended description of the many instruments on the market.

It is desirable, however, to consider briefly the various points which go to make up a good vibrator.

It must have sufficient power; be capable of delivering an even stroke, both deep and penetrating, as well as medium or light; be capable of quick adjustment from the light to the heavy stroke and from one kind of stroke to another; be capable of giving a rotating or lateral stroke, as well as an up and down stroke. It should give little or no vibration to the operator's hand, and be easily brought to bear upon various parts of the body, without any cumbersome mechanism.

Again, it should be capable of giving a considerable range of speed in the number of vibrations.

There are three principal types now in use: the rigid arm vibrator, the flexible shaft vibrator, and the portable vibrator.

There has been much controversy between the advocates of different makes of vibrators, and frequently it is claimed that certain machines do not have sufficient power for the purposes demanded of them.

This is a matter that depends largely upon what is understood by sufficient power.

It is apparent that for many conditions only a moderate amount of power is demanded or may be tolerated; hence in these cases nearly all machines will answer the purpose.

In the case of deep spinal stimulation, the result is more quickly obtained by a heavy machine, and lighter vibrators require a relatively longer application to accomplish the same

result; but when this end is finally reached there can be but little choice.

It is equally obvious that the weight or pressure increases rapidity of action, although the length of stroke remains the same.

The friends of the larger machines claim that the smaller ones have insufficient penetrating power and the advocates of the latter claim that some of the larger machines have too much power and may have harmful by-effects.

I must repeat that it is merely a question of having force enough, beyond which the power is wasted.

Only a certain degree is necessary or can be tolerated by the tissues.

One might illustrate this by comparing the vibrators to various-sized hammers. If one wished to drive a small nail, he could do so with either a sledge hammer, an ordinary hammer or a tack hammer.

The sledge hammer would drive it at one

blow, but there would be much superfluous power; the ordinary hammer would drive it in four or five strokes; and the tack hammer would possibly require a dozen blows. However, the final result would be the driving of the nail.

More importance in the selection of a vibrator will naturally be attached to the character of stroke, convenience of adjustment, speed, etc.

Whatever the type of machine used, the general results have been very gratifying, as evidenced by the multitude of clinical reports by operators all over the country. Naturally, the better the instrument and the more it is adapted to the character of work required of it and also the greater the knowledge of the operator, the more successful must be the results. A good operator will obtain results with a comparatively poor machine; he will obtain much better results with a first-class machine.

APPLICATORS.

A number of different styles of applicators are on the market. The applicator is the part of the vibrator which transmits the vibration directly to the body and it is commonly known as the vibratode. Some of the principal forms are shown in Plate III.

A represents a hard rubber ball which is used in spinal stimulation or inhibition.

B represents a flat disk which is used over the surface of the body and in some vibrators where the disk is small it is sometimes used in spinal treatment.

C is a soft rubber applicator called a brush because of the many little rubber points on it. It is used over the abdomen and over sensitive areas, where it is desired to get quick, soothing or inhibitory action, and it is often used over tender areas in the spine to lessen the

pain, preparatory to the use of the hard rubber ball.

D is a hollow rubber cup, also called a vacuum cup, which is useful in facial and scalp massage and may take the place of the brush over tender areas. It is also used in treating the ear.

E shows one form of rectal applicator.

F is a cone-shaped rectal applicator, used where considerable dilatation of the rectum is required.

G is a prostatic applicator which also frequently is used as a rectal applicator. The part next the vibrator is a rubber cushion. which prevents too much force being used in treating the prostate. Another form is also made with the body of metal and an attachment for connecting the galvanic or faradic electric current.

There are many other special applicators on the market and the reader is referred to the catalogues of the various manufacturers.

GENERAL TECHNIQUE.

For vibration of spinal centers, the patient should lie on the face on a table or couch with the arms hanging down or brought under the table to separate the shoulder blades and relax the muscles. Occasionally it is found desirable to place a small pillow under the head and another under the abdomen.

One great advantage of vibration is that absolute stripping of the patient for the treatment is not always required. In simple cases, it will be sufficient, if the patient is a man, to remove the coat, vest, collar and suspenders. If a woman, it is frequently necessary that corsets and other clothing should be removed down to the undervest and a loose kimono then slipped on. If, however, it is a minor ail-

ment and the corsets are loose, the lacings being wide enough to admit free access to the spinal area, the corsets need not be removed. These arrangements must be governed largely by the exigencies of each individual case.

In treating the head, neck and shoulders, it will often be found sufficient to place the patient on a revolving stool.

In treating the abdomen, patient should lie on the back with the knees drawn up to relax the abdominal muscles.

In giving treatment to the spinal centers the seventh cervical vertebra, or vertebra prominens, is usually taken as a convenient landmark to count from, and it will be found easy to keep track of the vertebræ with the thumb or index finger of the left hand, while applying the vibrator with the right, pressing the ball applicator well in at the side of the spinous process down to reach the posterior division of the spinal nerves, at the opening be-

tween the transverse processes, which will be found on a level with the spinous process.

(See Plates I and II.)

VIBRO-MASSAGE.

The application of vibration with a stroking movement of the applicator, thus in a measure combining vibration and massage, has come to be known as vibro-massage. It may be either stimulating or inhibitory in accordance with the length of the application.

REGIONAL TECHNIQUE.

In vibrating certain regions of the body, special points must be kept in mind, therefore, I give herewith the directions for several of these regional techniques, accompanying each with an explanatory diagram or illustration.

Vibrating the Chest.—In applying vibratory treatment over the chest itself, the application is in the nature of a vibro-massage and the direction in which to make the strokes is of importance. The brush applicator is preferable. Place patient on back with arms extended upward. An easy way is to clasp the hands back of the head.

From the jaw-bone stroke downwards toward the clavicle. In the upper part of the chest over the pectoral muscles stroke from the

shoulder inwards toward the sternum. In the lower part of the chest stroke from the breast-bone outwards along the line of the ribs and finally upwards into the arm-pits, to stimulate the axillary lymphatics. Over the sternum itself stroke either up or down.

The arrows in the illustration show the directions of the various strokes. (See Plate V.)

Headaches.—Headaches nearly always are relieved by prolonged (inhibitory) vibration over the painful area. Use rubber cup or other soft rubber applicator. In headaches due to some organic change, as in errors in refraction, vibration will relieve, but the respite will be temporary. Toxic headaches and migraine are not considered. The site of the headache is frequently of diagnostic value and the various points are indicated in Plate VI.

Headaches at A or B are congestive or frontal. Errors in refraction; frontal sinus disease or nasal diseases cause pain at A. Stomach

disease, frequently A. Constipation; decay of front teeth, AB. Anemia; endometritis; bladder disease, C. Disease of middle ear; throat disease; eye disease; decayed teeth, DE. Uterine disease; spinal irritation; nervousness, E. Neurasthenic headaches are in the back of the neck.

Ovarian reflex headaches are usually at C and E.

The Sciatic Nerve.—Vibration to the sciatic nerve is applied in an upward stroke over the course of the nerve as shown in Plate X. Also back of the great trochanter to reach the nerve at its point of exit from the pelvis, as indicated by the upper arrow.

The Solar Plexus.—The solar plexus is reached and influenced by vibrating upwards and downwards on a line about 2½ inches to either side of the umbilicus, as illustrated in Plate VII. Vibrate from the rib-line downwards to just below the navel.

The Supra-Orbital Notches.—In relieving frontal headaches particular attention is given to inhibiting the supra-orbital nerve, which is easily reached and influenced through the supra-orbital notch at the upper inner margin of the orbital cavity.

The Pneumogastric Nerve.—The best place to vibrate the pneumogastric nerve is at the anterior border of the sterno-cleido-mastoid muscle, just back of the larynx at its most prominent point (the Adam's apple). See Plate IX. Bear in mind that prolonged vibration may cause fainting.

Abdominal Vibration.—In addition to spinal stimulation and (where indicated) rectal vibration in constipation, it is always necessary to vibrate over the abdomen. Patient should be lying on the back with knees well drawn up to relax the abdominal muscles.

The brush or flat disk is employed with a rotary or lateral stroke. Start at the cecum

and pass along the ascending, transverse, and descending colon and over the sigmoid. Let the applicator describe a spiral course as indicated by the dotted line in Plate VIII. Never let the vibratode remain longer than 2 or 3 seconds over any one spot. This is important and is the cause of failure in many instances. Short applications stimulate peristalsis; longer ones retard it.

After going over the whole bowel, go back to the cecum and repeat. Do this a number of times according to the severity of the case.

Inhibitive (prolonged) vibration would be indicated in diarrhea.

Equal success follows giving the spiral stroke reversed, that is, starting at the sigmoid and working back to the cecum.

Rectal and Prostatic Vibration.—The special technique for rectal vibration will be found under Constipation and that for the prostate under Prostatic Diseases.

VASO-MOTOR CENTERS.

In applying vibration to reach nerve-centers it must be kept in mind that we have two great systems within the body, i. e., the Cerebro-Spinal Nervous System controlling sensation and motion and the Sympathetic Nervous System presiding over the internal organs, secretion, circulation, the skin, etc.

Many organs receive nerves from both systems.

The ganglia of the sympathetic lying in front and on either side of the spinal column have communicating branches called the **rami communicantes** connecting them with the cerebro-spinal centers, and we find that in vibrating spinal centers we also reach and influence sympathetic centers.

This is of the utmost importance in vibratory therapy for by this means we are able to **equalize the circulation.**

The muscular fibers surrounding the blood-vessels are directly controlled by the sympathetic nerves. Those which cause relaxation or dilation in the caliber of blood-vessels are their size, vaso-constrictors.

Theoretically, by properly influencing the appropriate vaso-motor centers, the blood supply of a part may be regulated, thus overcoming either congestion or anemia as required.

VIBRATION TABLE*

Name of part.	Vaso-motor centers to treat to equalize circulation.	Centers to which pain is referred and which call for treatment to relieve.
Head and Neck....	3, 4, 5, 6, 7C; 1, 2, 3, 4, 5D.	
Heart	Same.	1, 2, 3D.
Arms	3, 4, 5, 6, 7D.	
Lungs	3, 4, 5, 6, 7D.	1, 2, 3, 4, 5D.
Stomach	2, 3, 4, 5, 6, 7, 8, 9D.	6, 7, 8, 9D.
Spleen	3, 4, 5, 6, 7, 8, 9, 10, 11, 12D; 1L (esp. 5, 6, 7, 8, 9D left side).	5, 6, 7, 8, 9D left side.
Liver	3, 4, 5, 6, 7, 8, 9, 10, 11D (espec. 5, 6, 7, 8, 9D r. side).	7, 8, 9, 10D (esp. r. side).
Pancreas	5, 6, 7, 8, 9, 10, 11, 12D; 1L.	
Kidneys & Ureters.	4, 5, 6, 7, 8, 9, 10, 11, 12D; 1, 2, 3, 4L.	10, 11, 12D; 1L.
Bladder	11, 12D; 1, 2, 3, 4L; 2, 3, 4S.	11, 12D; 1L; 2, 3, 4S.
Prostate	1, 2, 3, 4, 5L; 1, 2, 3, 4, 5S.	10, 11, 12D; 1, 2, 3S.
Uterus and Vagina.	Same.	10, 11, 12D; 1L; 2, 3, 4S.
External Genitals..	12D; 1, 2, 3, 4, 5L; 2, 3, 4S.	
Intestines	6, 7, 8, 9, 10, 11, 12D; 1L.	9, 10, 11, 12D.
Colon	1, 2, 3, 4, 5L; 1, 2, 3, 4, 5S.	
Rectum	Same.	2, 3, 4S.
Anus	12D; 1, 2, 3, 4, 5L; 2, 3, 4S.	
Legs	11, 12D; 1, 2, 3L.	
Skin of body.....	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12D; 1, 2, 3, 4L.	
Testis, Epididymis, Ovary	8, 9, 10, 11, 12D; 1, 2, 3, 4, 5L; 2, 3, 4S.	10, 11, 12D; 1L.

*C.—Cervical. D.—Dorsal. L.—Lumbar. S.—Sacral.

RHYTHM AND PITCH.

Attention has been called to the necessity of a vibrator giving even strokes with a wide range of speed.

An even, regularly recurring stroke causes each subsequent one to accentuate the former and gradually increases the strength and penetration of the vibratory wave, as well as developing a rhythm that facilitates cellular processes. Eventually it will probably be found that each organ has its proper vibrating pitch and can be reached and influenced by rhythmic vibrations of that pitch, whether mechanical, electrical, thermal or light vibrations.

CAUTIONS.

Never vibrate over a pus cavity, as the vibration will tend to scatter the pus germs through a wider area and produce additional infection.

In pyo-salpinx, pelvic abscess, and similar conditions, vibration may break down the limiting wall and allow the pus to escape into surrounding areas.

Care must be used in vibrating a pregnant woman about the generative organs or their nerve-centers, as unfortunate results may follow increased determination of blood to the parts, or uterine contractions may be induced.

Never vibrate a patient with advanced arterio-sclerosis. Increased blood pressure may cause serious results.

Never vibrate over a cancer or other malignant growth.

It is not advisable to give a treatment immediately after the patient has partaken of a hearty meal.

ADENITIS.

In glandular enlargements, before the glands have broken down, the vibrator will be found of great value, either alone or in conjunction with other treatment.

Vibration is applied with disk or soft rubber applicator over the glands themselves, gradually increasing the pressure and using first an up and down and then a rotary stroke.

If the glands are very painful, the brush, with rotary or lateral stroke and rather high speed, should be used first.

After vibrating the glands, stimulate the adjacent lymphatics, the spinal centers (ball attachment used), and preferably also the liver and spleen.

Suppuration takes place in glands only when

their engorgement is so great that auto-infection becomes possible and vibration, by relieving this engorgement, tends to prevent suppuration. If a gland has already broken down the applicator must not be placed over it and if, for any reason, surgical treatment is not undertaken, the vibrator is applied to the surrounding and draining lymphatics; together with the remaining technique as above indicated.

Cervical Adenitis.

(1) Disk or brush with fairly rapid speed, gradually increasing the length of stroke; for two to five minutes, over the glands and neighboring lymphatics. Rotary or lateral stroke.

(2) Ball applicator, to the cervical, dorsal and first lumbar spinal centers.

Inguinal Adenitis (Bubo).

(1) Ball applicator to lumbar nerves; then

(2) Brush or disk to glands, gradually in-

creasing pressure and length of stroke as painfulness disappears.

Ten to fifteen minute treatments, daily or twice a day. An appreciable difference in the size of the glands is frequently noticeable immediately after the treatment.

AMENORRHEA.

Simple cases of amenorrhea usually yield readily to vibration.

(1) Ball attachment; percussion stroke to lumbar and four lower dorsal centers; ten to twenty seconds over each; medium speed and long stroke, repeating several times.

(2) Rotary, lateral or percussion stroke two or three minutes over each ovary.

Treatment should be given daily or every other day.

Use care not to get the inhibitory effect over the spinal centers. (In metrorrhagia, inhibition is desired.)

In treating over the ovaries, use the brush or disk with medium stroke. Patient should then be lying on her back with knees well drawn up.

Cases due to anemia should have appropriate medication in addition to vibration.

Do not forget that vibration is contra-indicated in pyo-salpinx, pelvic abscess and pregnancy.

Where misplacements exist, local treatment with vaginal vibratode, rotary stroke, is usually indicated.

ANKYLOSIS.

Fibrous ankylosis of joints affords an especially favorable field for vibration.

In recent cases, care must be exercised in not vibrating heavily over the joint itself, but gradually working up to it from surrounding structures.

In old chronic cases the joint should receive vigorous vibration. In both cases passive movements should accompany the treatment.

Attention is called to the particular muscles usually involved in joint affections.

(a) Shoulder. Deltoid; supra and infraspinatus.

(b) Elbow. Biceps; brachialis anticus.

(c) Hip. Glutei.

(d) Knee. Quadriceps extensor.

This will naturally suggest that the spinal centers for these muscles should receive vibratory stimulation with the ball vibratode. Medium or long gyrating or percussion stroke, with medium to deep pressure.

Centers to be stimulated are:

(a) For shoulder; fourth and fifth cervical.

(b) For elbow; fourth, fifth, sixth and seventh cervical.

(c) For hip; fourth and fifth lumbar.

(d) For knee; second and third lumbar.

Over the joint use the brush with rotary stroke and moderately high speed.

A vibro-massage, with the rotary or lateral stroke and rubbing the applicator along the course of the blood vessels from the joint toward the trunk, is very useful. Remember the cardinal principle of massage is, that the stroke should always be toward the heart, that is, in the direction of the flow of venous blood, thus facilitating the latter.

Always pass the applicator from the joint toward the trunk, then raise it up and bring it back to the starting point and repeat. Never pass it back and forth over the same course, but always in one direction only.

ASTHMA.

In spasmodic or bronchial asthma:

(1) Vibrate with the ball attachment; medium percussion stroke and medium speed; getting deep penetration to the cervical and dorsal centers, at least as far down as the seventh dorsal; and it is a good routine to include all of the dorsal centers.

(2) Go over the centers three or four times and if sensitive areas are found, go over these six or eight times.

(3) Then vibrate the pneumogastric nerve, reaching it at the side of the neck opposite the most prominent part of the larynx, at the anterior border of sterno-cleido-mastoid muscle.

(4) Then, with patient reclining in chair, or lying on back on table, use brush over pec-

toral muscles, working toward the sternum; then below the pectoral muscles vibrating toward and into axillæ. See Plate V.

Asthma is usually associated with some neurotic condition, which should also receive attention.

Use care in treating the pneumogastric nerve.

In asthma of cardiac or renal origin, only temporary relief may be had from vibration.

For cardiac asthma, deep inhibitive treatment to include the third to eighth dorsal centers and milder stimulation from the third cervical to the third dorsal.

For asthma from kidney disease, the last dorsal and first, second and third lumbar centers should be vibrated (inhibitive treatment). In short, a good method is to vibrate from the fourth dorsal down to the fourth lumbar inclusive.

BURSITIS.

This condition, of which the most common example is the lump appearing on the back of the wrist known as "weeping sinew," has been treated successfully by means of vibration.

The method that I employ is to vibrate directly over the inflamed bursa, using firm pressure and treating for ten minutes, daily.

CEREBRAL ANEMIA.

(1) Apply the ball vibratode to the cervical and first five dorsal centers. Use considerable pressure, either percussion or gyrating stroke; medium length; and apply for thirty to forty seconds or longer, over each point, to get inhibitive effect.

(2) Then use the rotary or lateral stroke with the brush or with the soft rubber ball, or rubber cup, and vibrate with light pressure for a minute or two over the occiput and over the side of the neck, using medium speed (4,000 or 5,000 vibrations).

CEREBRAL HYPEREMIA.

(1) Vibrate the cervical and upper five dorsal centers, using medium long stroke and applying firm pressure for six to fifteen seconds over each point.

(2) Then with circular or lateral stroke and moderate speed, vibrate the cervical region anteriorly, to reach the sympathetic nerves. Apply the brush or other soft applicator for twenty seconds over each point.

Always use care in vibrating over the pneumogastric, as grave symptoms may follow inhibitory vibration. The gyrating or lateral stroke to the extremities, with medium length and high speed, is also useful.

CHOREA.

Vibration will be found a useful agent in chorea. In general, the treatment should consist in inhibitory vibration of the motor centers of the part affected with the spasms.

One or two treatments a day of ten minutes each would be the ideal way, but as this is seldom possible it will be found that three times a week will ordinarily suffice. In this case the duration of the treatment should be fifteen to twenty minutes.

Use ball or disk vibratode; long stroke; and medium speed.

Exercise, diet and other forms of treatment such as static or high frequency current or leucodescent light, are valuable in connection with vibration.

Another method of treatment, which has given successful results, is to vibrate the whole of spine, buttocks, back of legs and soles of feet.

CHRONIC BRONCHITIS.

(1) Deep stimulation of cervical and dorsal centers; three to five seconds or longer to each, with ball vibratode; medium stroke and speed.

(2) If sensitive spots are found, give an inhibitory treatment to each of them.

(3) Then with patient on back and arms extended above the head, use gyrating or lateral stroke with brush, over chest, the stroke being short, but the speed rapid. See Plate V for method of vibrating the chest.

Vibration has been used as a satisfactory aid to other treatment in acute bronchitis.

COCCYDYNIA.

This condition, known also as coccyalgia and coccygodynia, and commonly as "painful coccyx," is of frequent occurrence. It is usually met with in women, often following injury to the bone or its attachments during childbirth.

The coccyx may be injured also by a fall on the end of the spine, and occasionally rheumatism or neuralgia centers at this point. The pain is at times severe and lasting enough to call for removal of the bone or severing of the ligaments attached to it.

Vibration is applied with a brush or a soft rubber applicator, immediately over the coccyx, and the lower part of the sacrum. This treatment should be of an inhibitive character, consequently a long application is indicated.

Following this, treat through the rectum over the internal surface of the coccyx and also to reach the lowest ganglion of the sympathetic nerve.

The prostatic applicator is particularly suited to this part of the treatment by reason of its comparatively small size. The technique for intra-rectal vibration is given under Constipation.

The treatment of painful coccyx should be frequent until improvement takes place or it has been demonstrated that vibration is useless, when surgical treatment is advised.

CONSTIPATION.

The treatment of constipation has always proved an obstinate problem. The remedies employed vie in number with those used for rheumatism.

In no other condition has vibration proved of greater aid and importance than in the treatment of this symptom.

Whether used alone or in combination with drugs it has been of signal value.

I believe in using vibration in connection with other measures, exercise and diet being given the preference over drugs.

The principal object to be accomplished by vibration is the stimulation of the peristaltic movement of the bowels. To obtain this result three distinct steps in technique are necessary,

of which any one may be employed, or all three combined as indicated in the individual case.

These steps, in the order in which they should be given, are:

(1) Stimulation of spinal centers.

(2) Local treatment over the bowels.

(3) Vibration within the rectum or farther up the bowel.

The original theory advanced for the vibratory treatment of all forms of disease consisted in stimulating or inhibiting spinal centers according to the requirements of the case. It is now realized that much may be accomplished by vibrating areas outside of the spine, but in most diseases the spinal application is of the greatest importance.

The centers which call for stimulation when constipation is present are the sixth, seventh, eighth, ninth, tenth, eleventh and twelfth dorsal; the third, fourth and fifth lumbar; and the first, second and third sacral. It is a good

routine treatment to start with the fifth or sixth dorsal and vibrate down to the coccyx.

The ball applicator is used and is pressed firmly in at the side of the spinous process, first on one side and then on the other. The length of time required for each center depends primarily upon the strength and penetration of the machine used. The percussion or pounding stroke is employed and the average time is ordinarily eight or ten seconds, stimulation and not inhibition being the object. After vibrating down to the end of the spine start back at the dorsal region and go over the same centers again. Repeat this spinal stimulation for three, four or even more times. It is needless to say that during spinal treatment the patient lies face downward on the table or couch. Occasionally it is permissible to treat the patient sitting on a stool and leaning forward with arms folded. All heavy clothing should be removed.

The spinal stimulation may be followed by vibrating between the ribs on the right side over the region of the liver as a preliminary to step number two, which consists in abdominal vibration.

For this latter it is necessary to have the patient lying on the back with knees drawn up to relax the abdominal muscles. The bladder should be empty.

The brush or a flat applicator is used with preferably a rotary or a lateral stroke. Treat over the bare abdomen, dusting on talcum powder if the skin is moist, or else treat through a thin undergarment.

Start at the cecum and follow the course of the large bowel; use deep pressure and advance in short steps or in a spiral course, dwelling only two or three seconds over each spot. (See Plate VIII.) Repeat this part of the technique several times. Be very careful not to treat too long over any one portion of the bowel and

thus inhibit and stop peristalsis instead of increasing it.

This is a very important point and one in which the doctor frequently errs in his first cases.

I have often received letters from physicians stating that they had followed the method given in my text-book without obtaining successful results. In nearly all of these instances inquiry has elicited the fact that the abdominal treatment was carried to the point of overstimulation or inhibition by holding the applicator too long over each spot. This resulted from a desire to be especially thorough and conscientious in the treatment.

It is obvious that in the case of mechanical obstruction of the bowels vibration would avail little or nothing.

The final step in the technique is rectal vibration. For this purpose the patient lies on one side with the knees drawn up (Sims' posi-

tion), and the special rectal applicator or vibratode is used. It is lubricated with vaseline or other unguent and the vibrator set in motion, with a medium rotary stroke. The lateral stroke may be employed, but the percussion stroke is absolutely useless in this part of the treatment. The applicator is pressed firmly against the rectum (anus), and in from twenty to sixty seconds the sphincter muscles will painlessly relax and allow the applicator to pass into the rectum where it remains for from three to five minutes; when it is carefully withdrawn. The prostatic applicator may be used in place of the usual rectal applicator if desired.

If any sensation of discomfort remains after the intra-rectal treatment, it may be relieved by vibrating for a moment over the anus and perineum. Occasionally an applicator in the form of a long rectal bougie is used.

An immediate desire to evacuate the bowels usually follows the rectal treatment.

Where there is a general atonic condition present it will be desirable to stimulate the pneumogastric nerve. The most convenient point to vibrate to reach this nerve is on the side of the throat just back of the larynx. (See Plate IX.)

It should be borne in mind that stimulation of the pneumogastric slows the action of the heart and it must be vibrated carefully and for only a short time, say ten to twenty seconds.

In the beginning it is necessary to treat the patient once a day, and twice a day would not be too much. As improvement takes place the treatments are dropped to three, two and finally one treatment per week.

Drugs may be necessary at first but should be used cautiously if at all.

The drinking on arising in the morning of a pint of water with a pinch of salt or the juice of half a lemon in it is recommended, also the

cultivation of regular habits by an attempt at defecation at a certain time, say after breakfast or after any meal. An apple or an orange at night or a dish of prunes at breakfast time is often useful.

Exercises involving the use of the abdominal muscles are suggested. Of these standing and bending forward to try and touch the floor, while keeping the knees stiff, and lying on the back and raising the body to a sitting posture are examples.

Perseverance in the treatment and regularity on the part of the patient are absolute essentials in successfully coping with constipation.

CYSTITIS.

Begin at the ninth dorsal and vibrate the spinal centers down to and including the sacral centers. Use ball vibratode; long stroke, and fairly rapid speed. Get inhibitive effect by deep pressure and long vibration (30 to 60 seconds or more). Then with brush, rubber cup or soft ball, use heavy gyrating stroke to the perineum and lower part of the abdomen, over the bladder area; also to the lymphatics in the groin.

In male cases, internal treatment through the rectum to the prostate gland, with short rotary or lateral stroke and special applicator is often desirable.

Stimulation of liver and spleen are generally indicated.

DEAFNESS.

In simple catarrhal deafness and in deafness from partial ankylosis of the ossicles, I have had excellent results with vibration.

Each ear should be tested with a tuning fork applied to the mastoid and forehead to note whether bone conduction is better than that through the natural channels.

If the sound is heard through the bone, but not through the auditory canal, there is every reason to anticipate relief or cure from vibration.

In the absence of a tuning fork, a loud ticking watch may be used, but inability to hear its ticking when applied against the ear does not necessarily imply inability to help the hearing, as it is not a sufficiently delicate test, as I have demonstrated in a number of cases.

Where partial deafness exists, the watch answers the purpose nicely and it should be noted just how far the watch can be heard, testing each ear separately. After commencing the treatment, test again every two or three weeks and the improvement will be apparent.

The technique which I have found most satisfactory is the following:

(1) Spinal stimulation to cervical and first and second dorsal centers, with ball attachment and short gyrating or lateral stroke, using medium speed and applying from three to six seconds over each point.

(2) Then with rubber cup, or vacuum ball vibrate over the external auditory meatus; then just in front of the ear; below it; and behind it; six, eight or ten seconds at each point, repeating the process three or four times.

(3) Finally have patient open mouth and fix lower jaw so that heavy vibration, with

soft rubber cup on chin will transmit vibrations back along the jaw bone.

A thorough massage of the muscles of the neck with the rotary or lateral stroke working from above downward is advocated by many operators, and others make use of the first and second fingers of the left hand interposed between the vibratode and the tissues as a means of transmitting the vibrations to these muscles. Also some use the tip of the finger in the ear in the same manner to carry the vibrations within the auditory canal for their effect upon the eustachian tube.

When vibrating over the vagus, which is reached in front of the sterno-cleido-mastoid muscle on line with larynx, be careful about vibrating too long, as symptoms of syncope may be produced.

Conditions where even deficient bone conductivity existed, have been reported benefited by mechanical vibration. The high-frequency

current through a small vacuum tube introduced in the ear, is especially useful in connection with vibration.

Recently large vacuum cups have been made which cover the whole ear, making it necessary to vibrate only in this one spot, instead of those named in section 2 of the preceding technique.

DIABETES MELLITUS.

Vibration has been recommended for diabetes on the basis of Kellogg's statement, that "vigorous muscles, even when at rest, destroy more sugar than do feeble ones" and the further statement that "exercise of the muscles increases the consumption of sugar and thus diminishes the amount of sugar found in the urine in cases of diabetes."

This would possibly warrant its use in this disease as an adjunct to other treatment, unless arterio-sclerosis is present, when vibration is contra-indicated.

I would suggest as a technique a general spinal stimulation, with ball applicator; and then vibro-massage with gyrating stroke to the larger muscles. Also stimulate liver, (fifth to ninth dorsal centers, right side, and to intercostal spaces).

The D'Arsonval current by Auto-Condensation is superior to vibration in this disease.

DRUG HABITS.

In the various drug habits the nerves get into an irritable or inflamed condition, there is interference with the circulation and with the liver, bowels or other organs.

Vibration, through the control of nerves, blood-supply, etc., as well as through the grateful effects of vibro-massage, will prove especially beneficial in these cases.

It may be used alone or in conjunction with any other form of treatment.

Morphine or Opium Habit.

In this habit the liver is so interfered with that obstinate constipation and finally disease of the liver itself results. The yellowness or sallowness of the skin in victims of this habit is very noticeable.

The vibratory treatment consists in thoroughly stimulating the spinal centers, paying especial attention to the fifth, sixth, seventh, eighth and ninth dorsal centers on the right side.

Also vibro-massage over liver and over the whole abdomen.

For restlessness, sleeplessness, etc., a general vibro-massage is indicated.

The late Dr. Pilgrim employed what he termed "mesenteric flushing" in these cases and also in alcoholism.

The procedure is as follows:

"The patient should drink a pint at least of water, (hot for alcoholism; hot or cold for morphinism), and then lie on his right side with the knees well elevated. Vibratory stimulation with the ball should then be applied to the spine between the fourth and fifth dorsal vertebræ, using firm and tolerably deep pres-

sure.'' This is done to relax the pyloric opening of the stomach.

''Next place the hand over the abdomen, just below the stomach, and exert heavy upward pressure, with a view to elevating the stomach. When this is accomplished, the contents of the stomach will rapidly discharge into the abdomen without much absorption taking place through the gastric glands.''

The sixth to eleventh dorsal centers should then be stimulated to facilitate absorption.

Alcoholism.

In alcoholism the heart requires stimulation, and therefore, in connection with the mesenteric flushing spoken of above the general vibro-massage for restlessness and insomnia; the spinal centers from the third cervical to the fifth dorsal, inclusive, should be stimulated for their effect upon the heart; also vibro-massage over the heart area, with patient in an erect position.

Vibration to the palms of the hands and soles of the feet is also advised, and abdominal vibro-massage.

Cocaine Habit.

In this habit the peripheral circulation calls for stimulation, that is the circulation away from the heart and at the surface of the body.

Give a vibro-massage to the arms and legs, working from the fingers toward the shoulder and from the toes toward the hip.

DYSMENORRHEA.

In cases where the pain occurs during the commencement of the flow, being of a cramping nature and disappearing when the menses are well established, I have ordinarily found that vibration with rotary or percussion stroke, medium or rapid speed and fairly deep pressure directly over the painful areas, would give relief in five to eight minutes.

The vibrator is held steadily over a painful spot for two or three minutes or even longer.

Inhibitive vibration to the third, fourth and fifth lumbar centers is indicated where the regional vibration is insufficient.

In treating a case where dysmenorrhea regularly occurs, the treatment between menstrual periods should be applied from the tenth dorsal

down to the coccyx, giving inhibitory treatment over the sensitive areas which will be found.

For a few days before menstruation is expected, daily treatments should be given, or, if possible, twice a day.

Intra-vaginal treatment with special applicator may be indicated between periods. Common sense will tell the physician not to expect success in dysmenorrhea where mechanical obstruction occurs.

Associated troubles, such as constipation, neurasthenia and pelvic disorders, when present, must also receive attention.

ENURESIS.

Enuresis from phimosis, adherent prepuce, or other anatomical cause, certainly would not be expected to yield to vibration.

In cases suitable for vibratory treatment, the technique consists in inhibitory treatment from the ninth dorsal down to and including the fifth lumbar. Use deep stroke, increasing speed rather quickly from medium to highest speed. Apply vibratode from thirty or forty seconds even up to two or three minutes over each center. A daily treatment until improvement is manifested. Applications over the perineum and through the rectum or vagina to the neck of the bladder are also indicated in many cases.

It is claimed that inhibitory vibrations to fifth lumbar and the sacral centers and also

to the external iliacs at the point where they cross the posterior superior spine of the ilium, will tend to relieve irritation at the neck of the bladder, no matter what the cause and also to favorably influence various bladder troubles.

EPILEPSY.

Temporary improvement following vibratory treatment has been frequently reported but I would not anticipate permanent results in any of these cases.

Deep stimulation along the whole spine is the method usually employed, with inhibitory treatment to any sensitive points. Snow also advocates deep interrupted vibration, with moderate pressure, over the solar plexus, using disk or brush applicator.

GASTRALGIA.

Stimulate the third to ninth dorsal centers on the left side, using medium stroke and deep pressure.

Gyrating stroke over posterior angles of left ribs and over the stomach in front, with moderately deep pressure and increasing speed up to the highest point.

GLEET.

The following technique has been suggested for gleet, either independently or in connection with other treatment:

(1) Stimulate the sacral, lumbar and lower four dorsal centers; ball vibratode.

(2) Treat inguinal lymphatics (brush, with rotary or lateral stroke) and then for thirty or forty seconds over the penis itself.

(3) Stimulate liver and spleen. (Fifth to ninth dorsal on right side for liver, same on left side for spleen).

GOITRE.

Vibration has been used independently in the successful treatment of goitre in a number of cases, but I believe better results are obtained by combining it with the X-ray and the high frequency current.

Vibration is useless in calcareous and fibrous goitres.

The patient is most conveniently treated sitting on a revolving stool.

Simple Goitre.

(1) Vibrate cervical and first to fifth dorsal centers, fifteen or twenty seconds over each; ball applicator; medium pressure and stroke.

(2) Stimulate liver and spleen; (fifth to ninth dorsal) long stroke.

(3) With brush or soft ball and medium

gyrating or lateral stroke vibrate the growth itself and then—

(4) With same stroke, stimulate lymphatics of neck and axillæ. Treat for ten minutes every day or every other day.

Ex-Ophthalmic Goitre.

(1) Treat whole spine with especial attention to inhibiting sensitive areas.

(2) Treat goitre and glands as for simple goitre.

(3) Vibrate between the shoulder blades to lessen tachycardia.

(4) Stimulate liver and spleen.

Internal remedies, galvanism, etc., should not be forgotten.

HEADACHES.

In simple congestive headache, where the pain is limited to the frontal region, I find that relief is obtained in a few minutes by applying a medium gyrating or lateral stroke, with rapid speed, over the forehead and temples, and holding the applicator over the supra-orbital notches for two or three minutes or more as required. Use the brush, rubber cup, or soft ball. This may be followed by stimulation of the cervical and upper five dorsal centers.

Stimulation of these centers causes contraction of the blood vessels and relieves congestion; inhibition of them causes dilatation and is used in anemia of the brain.

Where the headache is due to a defect in

the eyes, vibration will give temporary relief only.

Pain at the top of the head will usually be found associated with sensitive areas in the spine.

In pain in the back of the head a nervous origin will ordinarily be discoverable and sensitive areas will indicate the source of the reflex cause of the headache.

See Plate VI and paragraph under Regional Technique for fuller list of diseases and areas in head to which pain is referred.

In addition to vibration of the sensitive spots, a vibratory stroking massage, with rapid gyrating or lateral stroke, in the occipital region and down the sides and back of the neck will be found useful.

For the treatment of migraine see special article thereon.

HEMORRHOIDS.

For the relief of internal hemorrhoids, vibration should be applied as follows:

(1) Heavy stimulation of lumbar and sacral centers, with ball vibratode and long stroke.

(2) Stimulate liver (fifth to ninth dorsal centers, right side, and over intercostal spaces).

(3) Rectal applicator with short rapid gyrating or lateral stroke, applied over the rectum. If no protrusion exists, a twenty or thirty-second treatment over the anus is sufficient; but if internal pile tumors protrude through the sphincter to the outside, a longer treatment, one and one-half to two or more minutes over the tumors, and finally within the rectum, is required.

Daily treatments up to nine or ten and then three times a week. High frequency and other methods indicated.

In external hemorrhoids, vibrate with rectal applicator and medium gyrating or lateral stroke over the tumors. Results are slow in these cases.

HERPES ZOSTER.

Some remarkable reports have been made concerning the relief afforded by vibration to the pain and itching produced by this disease.

Treatments have proved satisfactory when merely applied to the sensitive areas in the spine, inhibition being sought.

Another operator has also treated locally over the painful area to inhibit the peripheral ends of the nerves.

Technique.

(1) Deep inhibitive vibration; ball applicator; over sensitive spinal centers.

(2) Short lateral or gyrating stroke; increasing from medium to highest speed; applied over diseased area, with soft rubber ap-

plicator, for two or three minutes over a spot; or until peripheral inhibition has been accomplished.

HYSTERIA.

In hysteria vibration is simply an adjunct to other measures.

(1) General spinal treatment with ball applicator and deep pressure, regulating the length of treatment as required.

(2) Lateral or gyrating stroke with rubber brush over anesthetic areas.

High frequency and static electricity are useful.

IMPOTENCY.

There is a mass of clinical evidence to indicate that a reasonable percentage of cases of functional impotency have been cured by vibration.

The technique which I have found most satisfactory is:

(1) Deep vibration to spinal centers from tenth dorsal to the coccyx; with ball vibratode and long stroke; medium speed; six or eight seconds or more as required over each center.

(2) Short gyrating or side-to-side stroke with soft rubber brush to inguinal region; to base and dorsal surface of penis; and to perineum.

Treat daily at first, then every other day.

Vibration is, of course, useless in impotency arising from locomotor ataxia or other constitutional diseases, its sphere being limited to functional cases.

Improvement has occasionally manifested itself in locomotor ataxia where the vibratory stimulation has caused improvement in the tabes itself.

Intra-rectal massage to the prostate, with short gyrating stroke, as described under diseases of the prostate, is often useful; also the sinusoidal or the high frequency current in connection with vibration.

INFANTILE PARALYSIS.

The technique for the use of vibratory stimulation is:

(1) Ball attachment; medium stroke and speed to all of the spinal centers, dwelling on each about ten or fifteen seconds.

(2) Medium length rotary or lateral stroke, and medium speed, applied with soft rubber brush, or vacuum ball, over the principal muscles affected.

Daily treatments over a long period of time.

Best used in conjunction with other measures, especially galvanism and the high frequency current.

Attention has been called to the desirability of vibrating over the ends of the long bones of affected limbs, to stimulate epiphyseal growth and lesson or prevent shortening.

INSOMNIA.

The general effect of even mild vibratory massage over the back of the neck and the occipital region, plus the rapid droning sound of the machine, tends to promote sleep and where circumstances render a treatment possible at patient's home at bedtime, as can be done with portable vibrator, this would be the ideal time for treatment.

In office treatment, the technique is as follows:

(1) Stimulate all cervical and first seven dorsal centers, with ball vibratode and medium stroke and pressure; six to ten seconds over each.

(2) With medium circular or lateral stroke and rapid speed; use brush or vacuum ball over sides and back of neck, and over the eyebrows (supra-orbital notches).

(3) With same attachment, but medium speed, give vibro-massage over intestines.

In those cases where considerable congestion of the brain is present, an application to the soles of the feet is often useful.

LEUCORRHEA.

In connection with such other measures as the physician finds advisable, the following method of procedure will be found of considerable value.

(1) Ball vibratode; medium stroke and pressure; medium speed; to ninth, tenth, eleventh and twelfth dorsal and all lumbar and sacral centers; twenty or thirty seconds over each.

(2) If sensitive points are found in the spine above the ninth dorsal, these spots should receive inhibitive treatment.

(3) With medium stroke and medium speed, vibrate over the uterus itself (patient on back, legs drawn up, deep pressure).

(4) With same stroke vibrate the inguinal

and femoral lymphatics. (Stimulating vibro-massage.)

(5) Use every four or five days intra-vaginal applicator, with medium or short rotary stroke, applying for about one and one-half to two minutes. (In certain cases, application may be made through rectum with rectal applicator).

Pains in the sacral region are relieved by prolonged vibration with brush; lateral or rotary stroke, and rapid speed; applied directly over the sacrum.

Daily treatment is advised.

LOCOMOTOR ATAXIA.

The use of vibration in locomotor ataxia has been productive of much benefit and in a large number of clinical reports, improvement has been noted and symptomatic cures or arrest of the progress of the disease have been reported in several instances.

I do not believe that mechanical vibration will revivify the dead and degenerated cells in the posterior columns of the cord; but there is reason to expect that in a fair percentage of the cases, many of the distressing symptoms may be relieved and the progress of the disease stopped or very materially retarded.

I use the following routine for the vibratory treatment:

(1) Heavy vibration; ball applicator; long stroke; medium speed to all of the spinal centers and to the sciatic notch, using as much

pressure as patient can stand, and vibrating twenty to thirty seconds over each point.

(2) Rotary or lateral stroke; medium pressure and length; to calf and posterior median line of leg.

(3) Brush; with light pressure; rapid speed; rotary or lateral stroke; over hypersensitive areas, until inhibition is accomplished. Over anesthetic areas. same stroke, for twenty seconds.

The vibration to legs and sensitive areas outside of the spine is not theoretically required; but practically affords considerable relief and comfort to the patient, for which reason I make their treatment a part of my routine.

I always employ the high frequency current in connection with vibration.

Constipation and other accompanying symptoms call for the vibratory technique recommended for these conditions.

Treatment must be kept up for months.

The sciatic notch is reached by vibrating just behind and internal to the great trochanter. See Plate X, upper arrow.

LUMBAGO.

Lumbago is one of the diseases the physician may safely assure his patient vibration will speedily cure.

One to five treatments are usually sufficient. Give daily or twice a day.

Technique.

(1) With deep pressure and long percussion stroke, give deep inhibitive vibration to dorsal and lumbar centers.

(2) With soft ball or brush vibratode, vibrate lumbar muscles, using lateral or rotary stroke; rapid speed, and long application, until pain is relieved.

In some cases brush will have to be used for two or three minutes over the spine before the

ball can be applied, on account of the sensitiveness of the areas.

Or, apply ball with short stroke and mild pressure, gradually increasing both as patient can stand it.

MELANCHOLIA.

Sensitive spots in the spine are nearly always found and when present should receive inhibitory vibration.

Technique.

(1) If too sensitive, brush may be used first, with light pressure, and followed by the ball vibratode with short stroke and also light pressure, both being gradually increased as patient will tolerate it.

(2) Liver and spleen should be stimulated (fifth to ninth dorsal centers; right side for liver, left side for spleen).

(3) Constipation is usually present and should receive the treatment outlined under that heading.

In some cases a general vibro-massage over the muscles of back and legs is found desirable.

METRORRHAGIA AND MENORRHAGIA.

To lessen the excessive flow during the menstrual period, give inhibitive treatment, with ball applicator; medium stroke and pressure; over eighth to twelfth dorsal and all of lumbar and sacral centers.

Treatments between periods should be in the nature of a general, but mild spinal stimulation. with attention to any accompanying symptoms.

The judicious use of the author's special uterine vibratode will be found of great value, especially where sub-involution or enlarged cervix exists, or where there is general atony of the parts.

Use rotary or lateral stroke with this applicator. The vaginal vibratode to reach the hypogastric plexus on the anterior aspect of

the sacrum and the ganglion impar in front of the coccyx is sometimes indicated.

Deep vibration over the uterus itself, through the abdominal wall. is another efficacious method, when sub-involution is present.

MIGRAINE.

Between the attacks, spinal treatment should be given daily or every other day of a soothing nature.

If possible, exciting cause should be located and treated.

It is usually from derangement of the stomach or other internal organs, producing disturbances of the sympathetic nerves controlling them.

During the attack I employ the following technique:

(1) Brush, over spinous processes in cervical region; rapid side-to-side or rotary stroke, followed by:

(2) Inhibitive treatment, with ball, to cervical and upper dorsal centers.

(3) Rotary or lateral stroke to back and sides of neck and back of head until sedation is produced, which may require several minutes.

Occasionally the temples and the supra-orbital notches require mild vibration.

NAUSEA AND VOMITING.

In order to relieve nausea or vomiting a prolonged application with deep pressure is made to the third and fourth dorsal centers and also to the sixth to eleventh dorsal centers inclusive.

Give more attention to the third and fourth dorsal and especially to the left side.

Vibro-massage over the stomach itself is sometimes desirable.

The same technique is used in seasickness or carsickness, and it is claimed that a long application to the sixth to eleventh dorsal centers will tend to ward off this disease.

NERVOUSNESS.

There are many people affected with an irritable condition of the nervous system, where the precise cause of the trouble is not easily ascertainable. In these cases it has been found that mild spinal stimulation is advantageous.

The brush should be used with mild, but rapid lateral or gyrating stroke, and applied the whole length of the spine.

If sensitive spots are found, these should receive inhibitory treatment with ball vibratode.

Special attention should be given to the cervical and upper eight dorsal centers.

NEURALGIA.

If neuralgia is due to organic disease of serious character and well advanced, vibration will prove but slightly beneficial, because it can only serve to temporarily deaden the pain.

Superficial neuralgias, on the contrary, yield surprisingly to vibratory treatment.

There are usually to be found sensitive nodes along the course of the affected nerve and these should receive local treatment and nerves should also be treated at those points where they are nearest to the surface.

Many neuralgias are difficult to distinguish from, and in fact may be associated with neuritis and the treatment would be applied accordingly.

Superficial neuralgias are more often from local irritating causes than from central neuroses, and therefore call more especially for

local treatment; as well as for vibration to the nerve centers.

The following technique is advised for the forms of neuralgia mentioned.

Supra-Orbital Neuralgia.

(1) Inhibitive treatment to cervical and upper five dorsal centers, with ball vibratode; medium stroke and speed; pressure medium to heavy; applications lasting thirty seconds or more over each center.

(2) Brush or other soft rubber vibratode; rapid, rotary or lateral stroke to occipital region.

(3) Same to supra-orbital notch, holding the applicator there two to five minutes, until pain ceases.

Tic Douloureaux.

One and two, as for supra-orbital form.

(3) Brush; with short, but gradually increasing stroke, up to highest speed; over side of lip, nose, on cheek, and at angle of jaw,

holding at each point one to three minutes.

Intercostal Neuralgia.

(1) Ball to lower cervical and all the dorsal centers; inhibitive treatment.

(2) Soft ball to the inferior borders of affected ribs.

Ovarian Neuralgia.

(1) Inhibitive treatment, with ball vibratode; from the eighth dorsal down to the coccyx.

(2) Local treatment over the ovary with medium stroke, fairly rapid speed, holding two to five minutes until pain is relieved.

NEURASTHENIA.

The treatment of neurasthenia means essentially the treatment of its varying symptoms.

(1) Stimulate cervical and dorsal centers, with ball attachment, and medium stroke and pressure; paying special attention to the splanchnic areas (fifth to eleventh dorsal).

(2) Inhibitory stimulation to sensitive spots.

(3) Brush; with medium rotary or lateral stroke; and medium speed; over painful areas, other than in spine.

(4) Where special functions are complained of, such as digestive disturbances, sexual weakness, etc., these should receive the vibratory treatment suggested under these several complaints or appropriate to the organs involved.

NEURITIS.

Neuritis may involve a single nerve or it may affect a number (multiple neuritis).

The general theory of the treatment is stimulation of the spinal centers of the nerves affected, with attention to the draining lymphatics; and the judicious use of local vibration along the muscles reached by the diseased nerves.

Brachial Neuritis.

(1) Inhibitory vibration to the fourth, fifth, sixth, seventh cervical and first dorsal centers. If very tender, use brush or soft ball; long treatment; then, later, as tenderness disappears, use the hard ball vibratode.

(2) Lateral or rotary stroke to axillary lymphatics and to shoulder and arm muscles.

Multiple Neuritis.

(1) Inhibitive treatment to whole spine; medium stroke and pressure. Brush may be used first if great tenderness is present.

(2) Brush; with light, rotary or lateral stroke, to affected muscles and nerves.

Galvanism, high frequency, static current and leucodescent light are valuable adjuncts.

OBESITY.

Considerable has been accomplished with vibration and oscillation in relieving obesity.

(1) Apply medium stroke and pressure; with medium speed; disk applicator; over the fatty parts. Rotary or lateral stroke.

(2) Gradually increase pressure and stroke to limit of patient's tolerance.

(3) Stimulate with medium stroke and pressure the adjacent lymphatics.

(4) Stimulate liver and spleen.

Avoid spinal centers, except those governing liver and the spleen. Daily treatment at first four to five minutes only; but gradually increasing up to twenty or thirty minutes.

Auto-condensation with the D'Arsonval high frequency current is useful in selected cases.

PARALYSIS.

I have thought it advisable to make a separate classification of this symptom.

In any disease where paralysis exists, the following technique is called for:

(1) Deep stimulation of spinal centers controlling affected muscles or parts. Ball applicator; medium to heavy stroke and pressure; medium speed; ten to twenty seconds or more over each point.

(2) Brush or soft rubber applicator over affected parts, with medium gyrating or lateral stroke, and moderate pressure. This should be a vibratory stroking massage, always stroking toward the heart.

(3) Same applicator to lymphatics of affected areas.

PELVIC ADHESIONS.

Place patient on back, with knees drawn up, and use disk or brush over the pelvis. Then stimulate the spinal centers, from fifth dorsal to coccyx. Frequently intra-rectal or intra-vaginal treatment will be necessary.

PLEURITIC ADHESIONS.

The absorption of pleuritic adhesions may be aided by the following method:

Vibratory stroking massage, with rotary or percussion stroke; low speed and medium pressure; patient lying on back, with arms stretched above the head. Vibrate the chest as illustrated in Plate V.

POST-FRACTURE CONDITIONS.

Vibration will readily commend itself as of great value in these conditions.

The best method is to use stroking vibratory massage, with medium rotary or lateral stroke, and medium pressure, over the point of fracture; along the course of the veins; and to lymphatics. Use brush or soft rubber applicator.

Spinal stimulation of nerve centers and stimulation of trophic centers is advocated by many operators.

DISEASES OF THE PROSTATE.

Great benefit has been produced by judicious vibration in all forms of prostatic troubles except those cases of "chronic enlargement with hyperplasia." Acute cases are nearly always relieved. In chronic enlargements, according to Schmidt, the results are most favorable in those cases where the mind is influenced by the prostatic condition; where small areas of inflammation exist; where the isthmus is inflamed together with old infiltrations in the prostatic urethra; and in simple sexual exhaustion. Before treating the patient the latter's bladder and bowels should be emptied.

The technique is essentially the same for all forms and consists in:

(1) Spinal stimulation, from first lumbar to coccyx (some advise including the eighth

and ninth dorsal as well); ball vibratode; medium stroke and pressure; six to ten seconds over each point, repeating several times.

(2) With special prostatic applicator and short gyrating stroke, but fairly heavy vibration; treat the prostate through the rectum. Introduce the lubricated vibratode while in motion. Patient on side in Sims' position, will be found most convenient. Vibrate for two to five minutes. The lateral stroke also may be used.

(3) Use gyrating or lateral stroke and soft rubber applicator to perineum; thirty to sixty seconds; especially if there is an uncomfortable feeling following rectal vibration.

(4) With medium gyrating or lateral stroke and speed; stimulate the inguinal lymphatics, (patient on back, knees drawn up). At first give daily treatments, ten to fifteen minutes' total duration; then, as improvement takes

place, drop to three a week, but persist for a long time.

The seminal vesicles may be massaged and emptied with the prostatic applicator if the case indicates.

An improved applicator is also on the market where galvanic, faradic or sinusoidal electricity may be given simultaneously with the vibratory treatment.

The advantage of using the sinusoidal current in connection with mechanical vibration, especially in cases of vesiculitis, has been observed by many operators, and this convenient device for employing both at the same time commends itself.

RHEUMATISM.

In connection with whatever other treatment the physician may advocate, the following vibratory technique is indicated.

Between attacks, stimulation of liver, spleen, kidneys and large lymphatic areas, is advised.

During the painful attack:

(1) Inhibitory vibration with ball; medium stroke and deep pressure; speed medium to rapid; to spinal centers controlling affected parts.

(2) With brush or soft rubber applicator and rapid stroke; give stroking vibro-massage to affected parts, and then allow brush to remain over the peripheral nerves until inhibition is produced.

(3) Stimulate the lymphatics draining the area.

Treatments may be given two or three times a day if pain is very acute, otherwise a daily treatment will suffice.

SCALP TREATMENT.

In loss of hair from deficient nutrition and in other conditions of the scalp, where this is the case, a general vibro-massage with rotary or lateral stroke and fairly rapid speed, will determine a greater amount of blood to the scalp and thus be of benefit.

The dorsal and cervical centers may also be treated, as they control the blood supply to the scalp.

Stimulate the cervical and dorsal spinal centers, with ball attachment; medium stroke and speed; ten seconds at each point.

The high-frequency spark should be used in connection if possible.

SCIATICA.

The routine to be followed in sciatica is:

(1) Give deep inhibitory vibration, with speed; to seventh, eighth and twelfth dorsal, fifth lumbar and all of the sacral centers; gradually increasing pressure and speed.

(2) Same vibratode, with light, but gradually increasing pressure and stroke; applied to the sciatic notch, just back of the great trochanter. See upper arrow, Plate X. Other painful areas, close by, may be found, and should be inhibited by a long application.

(3) Treat back of leg from calf up; with special attention to the sciatic nerve. See Plate X. Disk or ball may be substituted for the brush when the patient can tolerate it. Treatments daily or twice a day.

SENSITIVE SPINE.

The treatment of this condition naturally suggests itself.

(1) Brush; with mild, rotary or percussion stroke; medium speed and pressure; over the whole spine (spinous processes and all).

(2) Inhibitory treatment, one or two minutes, over specially sensitive centers.

LATERAL SPINAL CURVATURE.

Observe the side toward which the column bends and note the contracted muscles.

(1) Give deep inhibitory vibration, with ball applicator, to the side having the contracted muscles. Dwell on each center one and one-half to three minutes, until complete relaxation of the muscles is produced.

(2) On the opposite or convex side of the curve; give a good stimulating vibration, six to ten or twenty seconds over each center. Use brush and apply it also over the spinous processes, which turn toward that side. Make pressure with brush or with thumb reinforcing the brush. during the vibration, in the direction of pushing the spinous processes back toward their proper position.

The object aimed at by inhibition of contracted muscles is relaxation and lessening of the irritation; while on the convex side, stimulation is given to aid the muscles and to increase the blood supply to the nutritive nerves.

SPRAINS.

In acute sprains the sooner vibration can be applied the better, as it lessens both swelling and pain and facilitates absorption. I have satisfactorily demonstrated in these cases that before swelling takes place, vibration of the affected part, and its neighboring lymphatics, often prevents any material swelling and greatly hastens recovery.

As the joint is usually very painful, I begin with a mild stroke; slow speed and light pressure; gradually increasing all three as the patient can bear it, until the pain is relieved; then the lymphatics are stimulated and finally the spinal centers governing the parts.

In sprains of the wrist or elbow, I always treat the lymphatics under the arm and the brachial plexus.

In cases of injury to ankle or knee, the femoral and inguinal glands are stimulated as well as those nearer the injury.

TONSILLITIS, PHARYNGITIS AND LARYNGITIS.

In connection with the customary medical treatment of these cases, vibration will be found of benefit. The vibratory technique is essentially the same for all of these conditions and consists in:

(1) Ball attachment; medium stroke and pressure; twenty or thirty seconds each, to cervical centers and down as far as the fifth dorsal.

(2) Soft ball, or brush, to front and sides of neck, getting well up under the corner of the jaw, and holding for one to two minutes. Use rotary or lateral stroke; medium length and pressure; and fairly rapid speed.

(3) Same applicator; with rotary or lateral

stroke and medium speed to the cervical and axillary lymphatics.

Liver and spleen usually require stimulation. Treatments to be of real value should be frequent.

UTERINE DISEASES.

In diseases of the uterus, vagina and ovaries vibration is given to the third, fourth and fifth lumbar centers. "Stimulation of these nerve centers causes vaso-constriction and muscular contractions also." (Schafer.)

Inhibitory treatment would have the opposite effect.

Practically, however, it is usually found desirable in diseases of these organs to vibrate from about the tenth dorsal down to the coccyx.

In addition to spinal vibration, local treatment over the lower part of the abdomen with rotary or percussion stroke and as deep pressure as can be tolerated, ordinarily will be indicated.

Finally, intra-vaginal treatment with the

special vaginal applicator, or with author's uterine applicator, and short or medium rotary stroke, lasting one and one-half to three minutes, may be required.

A physician who condemned the vaginal applicator severely at first, reported recently a cure of a case of retro-flexion with adhesions and now considers this one of the most valuable applicators in the list.

Intra-vaginal treatment is also indicated in vaginismus; relaxed walls; cystocele; and rectocele.

VARICOSE VEINS.

The technique recommended in varicose veins is—

(1) General spinal stimulation, ball vibratode, twenty seconds at each center.

(2) Brush applicator; rotary or lateral stroke; lightly over the varicosed veins, working in the direction the blood is flowing, i. e., toward the heart.

(3) Stimulate the neighboring lymphatics.

High-frequency currents and the X-ray are valuable in conjunction.

WRITER'S CRAMP.

(1) Stroking vibro-massage, with rotary or lateral stroke and medium speed and pressure, to the whole arm; beginning at the finger tips and working upwards.

(2) Mild stimulation of brachial plexus and axillary lymphatics; also to the cervical and upper dorsal spinal centers.

GLOSSARY

Ab' scess (pronounced ab' ses). A cavity or sack containing pus.

Ad en i' tis. Inflammation of a gland.

Ad' en oid. Resembling a gland.

Ad' en oids. Small growths found in the nose and throat of children.

Ad he' sions (pronounced ad he' zhuns). Growing together of two parts that are touching one another, as two adjacent parts of the bowel, etc.

Al im en' ta ry. Pertaining to food or nutrition. The alimentary canal is made up of stomach, bowels, etc., the organs involved in the digestion and absorption of the food.

A ne' mi a (pronounced an e' me ah). A deficiency in the quantity or quality of the blood.

An gi' na (pronounced an ji' na). Any disease characterized by a sudden feeling of suffocation.

Ank y lo' sis (pronounced ang kil o' sis). Consolidation of a joint, whereby it becomes absolutely or partially immovable. In true ankylosis the bones grow together. In fibrous ankylosis, little fibers or bands form within the joint and interfere with its use.

A'nus. The external opening of the rectum.

Ap' pli ca tor. The part of the vibrator that is applied to the body; the vibratode.

Ar te' ri ole. A small artery.

Ar te' ri o-scle ro' sis. Hardening of the arteries.

At' ro phy (pronounced at' ro fee). Wasting away of a part.

Au' to-con den sa' tion (aw' to-con den sa' shun). A method of giving the high frequency electric current.

Au' to-in fec' tion (aw' to-in fek' shun). Infection from a poison generated within the body itself.

Ax il' la. The arm-pit.

Ax' il la ry. Pertaining to the space under the arm, or arm-pit.
Bil' i a ry. Pertaining to the bile.
Bra' chi al (bra' ke al). Pertaining to the arm.
Brad y car' di a. Abnormally slow heart-beat.
Bron' chi al (brong' ke al). Pertaining to the bronchi or bronchial tubes.
Bron chi' tis (brong ki' tis). Inflammation of the bronchial tubes.
Cal' cu lus Gravel. A mineral deposit occurring in various organs, as stone in the bladder, gall-stone, etc.
Cap' il la ry. One of the minute blood-vessels connecting the arteries with the veins.
Car' di ac. Pertaining to the heart.
Cer' e bral (pronounced ser' e bral). Pertaining to the brain.
Cer' vi cal. Pertaining to the neck.
Cer' vix. The neck or any neck-like part.
Co' lon. The large bowel.
Con ges' tion (pronounced kon jest' yun). Accumulation of too much blood in a part.
Con trac' tion. The shortening or drawing up of a muscle.
Con' tra-in di ca' tion. Symptoms or conditions rendering it unwise or dangerous to use a certain form of treatment.
Cos' tal. Pertaining to a rib, or ribs.
Cys ti' tis. Inflammation of the bladder.
Dor' sal. Pertaining to the back, or to the twelve joints, situated below the neck in the upper part of the spine.
E de' ma (also spelled œdema). Swelling from watery fluid penetrating the tissues. When edema is present, pressure on the swollen flesh will leave a pit that will not fill out for some little time.
E lim i na' tion (e lim in a' shun). Carrying of a substance or material out of the body, through the natural channels.
En' do me tri' tis. Inflammation of the lining of the womb.

Ep i der' mis. The outermost layer of the skin.

Ep i di' dy mis. A body attached to the upper part of the testicle.

Ex' oph thal' mic (ex' of thal' mik). Denoting a condition where bulging of the eyes is present.

Gas tral' gia. Neuralgia of the stomach.

He pat' ic. Pertaining to the liver.

Hy per e' mi a. Too much blood in a part. Opposite of anemia.

Hy' per es thet' ic. Over-sensitive.

Hy per' tro phy (hy per' tro fe). Over-growth of an organ or part.

In con' ti nence. Inability to restrain a natural discharge, as the urine.

In' gui nal (in' gwin al). Pertaining to the groin.

In hib' i to ry. A prolonged vibration to produce inhibition or sedation.

In hi bi' tion (in hi bish' shun). The numbing or soothing of a nerve or nerve-center by prolonged vibration. The opposite of stimulation.

In ter cos' tal. Between the ribs.

In' tra-rec' tal. Within the rectum.

In' tra va' gin al. Within the vagina.

In vol' un ta ry. Not under the control of the will.

Leu' co cytes, or leukocytes (pronounced lu' ko sites). The white bodies or corpuscles in the blood.

Lum' bar. Pertaining to that part of the spine where the lumbar vertebræ are located.

Lu' men. The hollow space in a tube or the cavity of a blood-vessel.

Lymph (limf). A clear, slightly yellowish fluid circulating in the lymphatics.

Lym phat' ic (lym fat' ik). Pertaining to or containing lymph, as the lymphatic glands.

Mas sage' (mas-sahzh). Rubbing, tapping, or kneading the body. Vibratory massage is distinguished from hand massage by reason of its being accomplished with a vibrator. Vibromassage is rubbing with a vibrator, thus combining vibration and massage.

Men' o paus (men' o paws). The change of life.

Men′ ses. The monthly sickness.

Mes′ en ter y. The part that holds the intestine to the posterior abdominal wall.

Met ab′ o lism. The process of changing food-matter into living cells of the body. The change produced in a substance by the action of living cells upon it.

Met as′ ta sis. The transferring of a disease from one part to another not directly connected with it. This is especially common in cancer.

Me tri′ tis. Inflammation of the womb.

Na′ sal. Pertaining to the nose.

Neu ri′ tis. Inflammation of a nerve.

Neu ro′ sis (nu ro′ sis). A nervous disease, especially a functional nervous disease.

Nu tri′ tion. The process of assimilating or appropriating food or nourishment.

Oph thal′ mic (of thal′ mik). Pertaining to the eye.

Or i fi cial (or i fish′ al). Pertaining to an orifice or opening, as the outlet of any bodily cavity.

Pal pi ta′ tion. Unduly rapid heart action. Fluttering of the heart.

Par′ ox ysm (par′ ox ism). A sudden recurrence or intensification of symptoms.

Path o log′ i cal (path o loj′ i kal). A condition where disease exists; also changes wrought in tissues by disease.

Pec′ to ral. Pertaining to the breast.

Pel′ vic. Pertaining to the pelvis, which is the lower part of the trunk, being the part enclosed by the hip bones on the side and the sacrum and coccyx in the rear.

Per cus′ sion. A tapping or pounding; hence the same kind of a stroke given by a vibrator.

Per i ne′ um. The fleshy space in front of the rectum and between it and the sexual organs.

Per iph′ er al (per if′ er al). Pertaining to the periphery, which is the end of a nerve or other organ farthest from its center or source.

Per i stal′ sis. The muscular contractions which propel along the contents of the bowels.

Per' i to ne' um. A membrane which lines the abdominal cavity and covers over the vital organs it contains.

Phy si o log' i cal (fiz i o loj' i kal). A normal action or condition as distinguished from a diseased or pathological condition or action.

Pleu' ra. The membrane or sack that surrounds and encloses the lungs.

Pleu rit' ic. Pertaining to the pleura.

Plex' us. A bundle or group of nerves or veins.

Pneu mo gas' tric (nu mo gas' trik). The vagus or wandering nerve. It is the tenth cranial nerve and has both motor and sensory fibers. It and its branches supply the ear, throat, larynx, heart, lungs and stomach.

Port' al vein. An important vein carrying blood from stomach, spleen, etc., to the liver.

Post. A prefix signifying after; thus, post-operative, means after an operation.

Pros' tate Gland. A gland in the male surrounding the neck of the bladder.

Pros tat' ic. Pertaining to the prostate.

Pseu' do (su' do). A prefix signifying false. Thus pseudo-typhoid means false typhoid.

Pul' mo na ry. Pertaining to the lungs.

Py lo' ric. Pertaining to the pylorus.

Py lo' rus. The opening from the stomach into the bowel.

Rec' tum. The lower six or eight inches of the bowel. The word is also commonly used for the anus or opening of the bowel.

Re' flex. A reflected action or movement. Produced by transmission of a nerve impulse along a nerve to its center and thence along a motor nerve to its periphery. It may thus affect an organ or muscle at some distance from the source of irritation.

Re' nal. Pertaining to the kidney.

Sa' cral. Pertaining to the sacrum (a bone in the lower end of the spine), and the nerves coming from that region. The sacrum is formed of five sections of the spine fused in one bone.

Scle ro′ sis. Hardening.

Se da′ tion. The production of a soothing or calming effect. In vibratory technique it is used as essentially synonymous with inhibition.

Si′ nus. 1. A cavity or hollow space. 2. A channel in the cranium for venous blood. 3. An air cavity in one of the bones in the skull. The frontal sinus is such a cavity in the frontal bone at the root of the nose.

So′ lar plexus. The great plexus of nerves of the sympathetic nervous system, lying on the back of the stomach. It has been called the "abdominal brain."

Splanch′ nic (Splank′ nik). Vaso-motor nerves; branches of the sympathetic.

Sta′ sis. Stoppage of the flow of blood in any part.

Ster′ num. The breast-bone.

Stim u la′ tion. The condition or act of exciting or stirring up functional activity in an organ or tissue. The opposite of inhibition.

Sub′ in vo lu′ tion. Failure of a part to return to its normal size after having enlarged in performing its function. Usually used in reference to the womb.

Sup pu ra′ tion. The formation of matter or pus.

Su pra or′ bi tal. A nerve and a notch near the inner end of the eye-brow where the nerve comes to the surface. The prefix supra means above.

Tach′ y car′ di a (tak′ i kar′ di a). Rapid heart action, especially where constantly above normal.

Tech′ ni cal. 1. The scientific as compared with the common name. 2. Pertaining to technique.

Tech nique′ (tek neek′). Also spelled technic. The actual method of performing any mechanical process.

Tox e′ mi a. Blood poisoning. Poisoning by toxins (poisons) formed in the cells of the body or by the action of germs. Also spelled toxæmia.

Tox′ ic. Poisonous.

U′ ter us. The womb.

U′ ter ine (u′ ter in). Pertaining to the womb.

Vag i' na (vaj i' na). 1. A sheath. 2. The canal leading from the outer opening in the female to the womb.

Va' gus. The pneumogastric nerve. See pneumogastric.

Var' i cose. An enlarged and tortuous condition. Usually applied to abnormally enlarged veins.

Va' so-mo' tor. A nerve regulating the size of a blood-vessel, through controlling the contraction or relaxation of its muscular fibers.

Ver' ti go. Dizziness; giddiness.

Ver' te bra (plural vertebræ). One of the joints or segments of the back-bone.

Ves' i cal. Pertaining to the bladder.

Vi' bra tode. The applicator or part of the vibrator which is brought in contact with the patient's body.

Vi' bro-mas sage' (vi' bro mas sahzh'). Using the vibrator with a stroking motion, thus combining vibration and massage.

Vis' ce ral. Pertaining to a viscus, or large internal organ.

Vis'cus (plural vis' ce ra). Any of the large internal organs.

Vol' un ta ry. Under the control of the will.

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